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Fighting Johnsongrass

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weed science

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FIGHTING JOHNSONGRASS

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Johnsongrass is a perennial sorghum spreading rapidly by seeds and rhizomes (underground stems). Originally introduced into Alabama about 1830 as a forage crop, it was reported in Indiana about 1900. Johnsongrass is Indiana's worst weed and is one of the world's ten worst. It is highly competitive and chokes out crops. In addition to lowering crop yields, it increases farming costs, limits cropping alternatives, harbors diseases of corn, reduces land values and decreases the market value of farm products.

Once considered a problem of river bottoms, it has now spread to uplands and is a potential threat to more than 6 million acres of cropland in the southern half of Indiana.

FACTS CONCERNING JOHNSONGRASS

-- Nearly one million acres of Indiana corn and soybean land is infested with johnsongrass. Infested acreage doubles every 7 to 10 years.
-- Johnsongrass reproduces both by seed and rhizomes (underground stems).
-- Seed is the major means of spread and long-term survival.
-- Seeds buried in the soil can survive for many years and serve as the major source of reinfestation.
-- Seed production on roadsides, utility rights-of-way, levees, waste lands, stream banks, etc., is a major source of johnsongrass spread to adjacent uninfested areas.
-- A major reduction in seed production in crop and non-crop areas must be achieved annually if the spread of johnsongrass is to be slowed.
-- Even in stands of johnsongrass with heavy infestations of established plants, seedlings are several times more prevelant than plants emerging from rhizomes.
-- Several tons of rhizomes are produced per acre annually. Rhizomes have large quantities of stored food and have the potential of producing a new plant for every inch or so of length.
-- An individual rhizome rarely survives more than one winter. However, new rhizomes formed each summer perpetuate the perennial nature of this weedy pest.
-- Johnsongrass plants with six or more leaves produce new rhizomes.
-- Overwintering rhizomes harbor viruses responsible for two devastating corn diseases, maize dwarf mosaic (MDM) and maize chlorotic dwarf virus (MCDV). These viruses are transmitted to corn by insects.
-- Rhizomes that have been mechanically disturbed are killed when exposed to

sub-freezing temperatures.

-- The most important agents for spreading johnsongrass are:
  Man planting it as a forage crop (source of original introduction).
  Man with harvesting, mowing, and earth moving equipment.
  Man with contaminated hay, crop seed, livestock feed, bedding, and mulches.
  Moving water during heavy floods.
-- Johnsongrass requires warm temperatures to grow (similar to those required for corn)
-- There are no one-shot simple cures for johnsongrass.
-- With well-planned and properly-executed programs, the economic impact of johnsongrass can be reduced, and the spread to new areas can be slowed or stopped.

Program Objectives for Fighting Johnsongrass

Three objectives in reducing the impact of johnsongrass as a plant pest in Indiana are containment, control and eradication.

Containment consists of limiting johnsongrass to currently infested areas. The technology is available to greatly improve containment. However, completely eliminating the spread of johnsongrass to new areas will be difficult. There are political problems involved since numerous individuals, organizations, institutions and government agencies are responsible for the management of johnsongrass infested land in Indiana. Each responsible individual or group would have to minimize johnsongrass seed formation on land under their jurisdiction and then prevent spread to uninfested areas. Such programs require considerable expenditures of time and money. The 1977 Johnsongrass Law should help focus efforts on preventing seed formation and spread.

Control is the suppression of johnsongrass to the point that its economic impact is minimized.

Control of johnsongrass on conventionally tilled cropland has become a reality, largely because of the introduction of new herbicide technology since 1965 and the integration of this technology into cropping systems in Indiana. The successful control of johnsongrass by Indiana farmers on their own cropland has resulted in their awareness that this pest is growing on adjacent sites not under their control. Seed produced in these areas recontaminate their fields and spreads to new areas as well.

Economical control is available for johnsongrass in many non-crop areas. However, more information is needed concerning control practices in areas where sod covers must be maintained to prevent soil erosion; for example, highway rights-of way, river banks and levees.

Effective johnsongrass control is not available for some of the conservation tillage farming practices such as no-till corn production or no-till double crop soybean production. In no-till crop production, planting and seedbed preparation are eliminated. As a result, no disruption of the johnsongrass rhizome system occurs, and herbicides used to control seedlings cannot be properly mixed into the soil. Both primary tillage and preplant soil incorporated herbicides are needed for effective johnsongrass control programs.

Eradication is the total elimination of all johnsongrass plants and plant parts from a given site. This includes destruction of seeds and rhizomes. It should be emphasized that the goal of eliminating johnsongrass as a major weed problem in Indiana will be extremely difficult to achieve.

Complete elimination of all established plants, rhizomes and seed is currently a reality only in the case of new, small infestations.

Once a large area has become infested, there are no practical methods by which the buried seeds can be killed in a short period of time. About the only approach is to stir the seeds to the soil surface by tillage where they can germinate and then the young plants can be killed before seeds or rhizomes are produced. Such a program requires several years of intensive effort. A major technical

break-through will be needed before short term eradication is a realistic possibility.

Methods of Johnsongrass Control

A. Preventing Seed Spread

Seed is the major source of new infestations. Therefore, reducing the production of johnsongrass seed on infested areas and preventing the movement of seed to new areas are effective measures for limiting the spread of the pest.

Preventing seed formation on infested areas requires suitable control measures before the seed heads have emerged. Johnsongrass growing on waste lands, rights-of-way, levees, fence rows, ditchbanks, etc., should be fought just as vigorously as that growing in cropland.

The following are suggestions for checking the spread of johnsongrass:

1. Make sure the crop seed you use is free of johnsongrass. The Indiana seed law bars sale of crop seed containing any prohibited noxious weed seeds, such as johnsongrass. Check the label before you buy.
2. Do not move hay or straw from infested to clean fields.
3. Do not spread on a clean field any manure from animals fed johnsongrass hay.
4. Thoroughly clean all machinery, especially combines and corn pickers, before moving from one field to another. Also check tillage and cultivating equipment, which may carry rhizomes from infested areas to clean parts of the field.
5. Do not move johnsongrass seed with highway and other rights-of-way maintenance operations and equipment. Mowers and earth-moving equipment should receive special attention.
6. Constantly be on the lookout for johnsongrass seedlings along fence rows, roadsides, as well as in fields. Immediately destroy all plants or patches you find.

B. Tillage

Fallow (clean cultivation) was the major method for reducing established extensive stands of johnsongrass in the past. Established stands of rhizome johnsongrass can frequently be controlled in one season. First, plow the land in June. After that, use a heavy-duty disc or sweep-type cultivator at frequent intervals to keep down top growth and break up the rhizome system. This means cultivating or discing every 2 weeks or so to keep all growth under 6 inches high. Continue cultivation until frost in the fall.

An alternate procedure utilizes a small grain (preferably wheat) which is seeded in the fall. After harvesting the crop the following summer, the land is plowed then cultivated at regular intervals until frost.

The use of a foliage-applied translocated herbicide treatment prior to the first tillage operation enhances control of established perennial plants.

Tillage is a necessary component of production systems for row crops grown in johnsongrass infested fields. In fact, No-Till crop production systems should not be attempted on johnsongrass infested land.

The moldboard plow followed by a disc to level the soil and then two additional discings to incorporate preplant herbicides for seedling control consitutes the least amount of preplant tillage that should be utilized in johnsongrass-infested fields.

Reducing the amount of preplant tillage will result in reduced control of johnsongrass.

Plowing in the Fall exposes rhizomes to freezing and can result in improved control of established stands.

Cultivation after the crop has emerged will also help control johnsongrass and should be utilized as effectively as possible.

C. Mowing

When properly executed, mowing can pre-

vent seed formation and in many instances can reduce the vigor of established johnsongrass stands.

To prevent seed formation johnsongrass should be mowed at 3 to 4-week intervals, starting in early June and continuing through September. In most years, this would require 4 or 5 mowings, each done prior to emergence of johnsongrass seedheads.

Mowing is most effective when used in conjunction with a competitive forage crop or turfgrass. Reseeding, fertilization and other good management practices to obtain maximum development of competitive forages during the Fall and Spring when johnsongrass is inactive will increase the chances of a successful control program.

D. Competitive Crops

Crops which initiate growth prior to emergence of johnsongrass and provide thorough shading of the soil can be combined with appropriate management practices to weaken established stands. Alfalfa hay, alfalfa-grass hay mixtures, grass pastures, winter small-grains and cool season turfgrasses all can compete well with johnsongrass.

Johnsongrass stands can be reduced when a vigorous hay crop is mowed three or four times during the growing season. A good stand of turfgrasses and mowing can be used to control johnsongrass. At least four mowings will be required to prevent seedhead formation. Additional mowings should enhance the degree of johnsongrass control further. Where soil erosion is a problem this is frequently the most appropriate management system to use.

Cool season pasture grasses such as orchardgrass, tall fescue, smooth bromegrass, and Kentucky bluegrass coupled with proper grazing management will control johnsongrass growing from both seed and rhizomes. Occasional mowing may be needed to supplement the grazing.

Winter wheat effectively retards development of johnsongrass until harvest in late June or early July. Subsequent mechanical and/or chemical fallow are utilized to complete the control program until frost. This program should result in a field free of rhizome johnsongrass for the start of the next growing season.

Any of the practices suggested above should be executed such that seed formation is prevented.

E. Herbicides

Introduction of new herbicides accounts for major gains in johnsongrass control technology during the past 15 years. Herbicides appear to offer the greatest potential for improved control in the foreseeable future as well.

Some terminology for herbicides may be helpful in interpreting and understanding the correct use of johnsongrass herbicides.

Broadcast, band and spot treatments refer to the relative amount of area covered by an herbicide treatment.

BROADCAST refers to an herbicide application uniformly covering the entire area to be treated.

BAND application results from treating a continuous strip, usually directly over the row and amounting to one-fourth to one-half of the row width.

SPOT treatments are herbicide applications directly to scattered plants, clumps and small patches, usually with a hand-held applicator. A relatively small fraction of the overall area is treated.

Herbicides may be applied either to the foliage or the soil. Foliage treatments are classified as contact or translocated while soil treatments are classified as preplant soil-incorporated, preemergence or soil sterilant.

CONTACT FOLIAGE herbicides are sprayed directly onto the foliage of growing plants. These herbicides do not move downward in the plant and result in top kill only.

TRANSLOCATED FOLIAGE herbicides are sprayed directly onto the leaves and then

move with sugars to the underground parts. These translocated herbicides result in kill of actively growing rhizomes.

PREPLANT INCORPORATED herbicides are applied to the soil prior to planting of the crop and mixed into the soil with a suitable implement, usually a disk harrow.

PREEMERGENCE herbicides are applied after the crop is planted and before the crop or weeds emerge from the soil. These herbicides require rainfall to move them into the soil.

SOIL STERILANTS are herbicides that are applied to the soil and persist for one to several seasons. They are used for areas where bare soil is maintained for a number of years.

SELECTIVE herbicides result in control of johnsongrass without damage to the crop.

PREPLANT SOIL INCORPORATED HERBICIDES are used in both corn and soybeans to control johnsongrass seedlings.

Failure to control johnsongrass seedlings which serve as a major source of reinfestation is frequently the reason for failure in an otherwise effective johnsongrass control program.

Since the period of johnsongrass seed germination usually coincides with that of corn and soybeans, herbicides provide the most dependable method of obtaining control in these two crops.

Herbicides applied for control of johnsongrass seedlings kill the seedling as it germinates. They do not kill dormant seeds. Johnsongrass seeds live in the soil for several years. Consequently, herbicides for seedling control are needed several consecutive seasons.

The most effective herbicides currently available for control of johnsongrass seedlings are those belonging to the 1) dinitroanaline group which includes Treflan (trifluralin), Tolban (profluralin) and Basalin (fluchloralin) and 2) the thiocarbamate group which contains Eradicane (EPTC - protectant), Sutan+ (butylate - protectant) and Vernam (vernolate).

Treflan, Tolban, and Basalin are the members of the dinitroanaline group of herbicides, which are suggested in soybeans for control of johnsongrass seedlings in Indiana. They are subject to breakdown by light and to some loss by vaporization when left on the soil surface. These losses necessitate incorporation into the soil within a few hours of application. The preferred method of incorporation is two passes with a double disc, (the second pass being at right angles to the first).

Treflan was the first of this group of chemicals to be introduced and is typical of the other compounds in the group. Research conducted at Purdue University has not shown any advantage of the more recently introduced compounds over Treflan. Out of almost a dozen similar compounds, only Tolban and Basalin have proven comparable to date.

Suggested rates are 3/4 to 1 pound per acre trifluralin or 3/4 to 1 quart Treflan 4 EC broadcast where soybeans are to be rotated to other crops. Twice these rates can be used if soybeans follow soybeans. These 1 1/2 to 2-quart dosages result in improved johnsongrass seedling control and some suppression of rhizomes. However, carry-over to corn or wheat crops may occur the first year after soybeans. Besides johnsongrass seedlings, Treflan will control annual grasses including wild cane, crabgrass, barnyard grass, and foxtails. It controls pigweed, but common ragweed, jimsonweed, velvetleaf, cocklebur, and giant ragweed are not affected. Treflan is suggested for use on soybeans and for a number of vegetable crops.

Tolban at 1 and 2 pounds per acre has given comparable johnsongrass control to Treflan at 3/4 and 1 1/2 pounds per acre. Basalin is used at identical rates to Treflan.

Cobex (dinitramine) and Prowl (pendimethalin) are also dinitroanaline herbicides which are labeled for use on soybeans as preplant incorporated treatments. Cobex is shorter lived in the soil than the other compounds in this group. But, soybean injury and rela-

tively poor johnsongrass control limit its utility.

Prowl has not been tested sufficiently in Purdue tests to fully determine the rates required to give acceptable johnsongrass control under Indiana conditions.

Eradicane and Sutan+ are the most effective herbicides currently available for control of johnsongrass seedlings in corn. They are members of the thiocarbamate herbicide group which typically evaporate very rapidly when left on the soil surface. They should be applied to a soil with a dry surface since the presence of moisture prevents adherence to the soil particles. These herbicides should be incorporated into the soil immediately after application to a depth of 3 to 4 inches. A disc harrow set to cut 6 to 8 inches deep or a power driven rotovator are effective incorporation implements.

Short life in the soil is a problem with Eradicane and Sutan+. Under Indiana conditions Sutan+ lasts for 4 to 8 weeks and Eradicane 2 to 6 weeks. At equal rates, Eradicane is more effective for johnsongrass control than Sutan+. However, Sutan+ can persist longer and will outperform Eradicane under some field conditions. Sutan+ is less volatile and less water soluble than Eradicane, which probably accounts for observations that Sutan+ controls johnsongrass better when corn is planted prior to May 1, or when used on course textured soils (sandy loams, silty sands, loamy sands or sands). On medium and fine textured soils (silt loams, silty clay loams, and clay loams), Eradicane appears to have a slight advantage.

Eradicane and Sutan+ are currently labeled for use at 4 to 6 pounds per acre active ingredient or 4 3/4 to 7 1/3 pints per acre of the 6.7 pound-per-gallon emulsifiable formulations. Our results indicate that the higher rates are worth the added cost.

These herbicides control all of the annual grasses common to corn fields in Indiana and at the higher rates give some suppression of johnsongrass coming from rhizomes. Other herbicides such as Atrazine can be tank mixed with Eradicane and Sutan+ to improve control of annual broadleaves.

Vernam is another member of the thiocarbamate herbicides and is labeled at a maximum use rate of 3 pounds per acre active ingredient or 3 1/2 pints per acre of 7 pounds-per-gallon emulsifiable for use in soybeans. Poor crop tolerance prevents use at higher rates. This coupled with shot residual in the soil limit its utility for johnsongrass control. Volatility, soil persistence and weeds controlled are similar to the two thiocarbamate herbicides discussed above.

PREEMERGENCE HERBICIDES include a number of products for use on corn and soybeans which possess some effectiveness for seedling johnsongrass control. These include Surflan (oryzalin), Lasso (alachlor), Amiben (chloramben) and Dual (metolachlor) for soybeans; and Lasso, Prowl, Dual and Bladex (cyanazine) for corn.

To date, none of these herbicides has proven competitive with the preplant soil-incorporated herbicides. None of these surface-applied chemicals suppresses johnsongrass plants developing from rhizomes, and control of seedlings has been poor and/or inconsistent.

Preemergence herbicides are not currently suggested for control of johnsongrass in Indiana.

POSTEMERGENCE FOLIAGE TRANSLOCATED HERBICIDES are used to control established johnsongrass plants. Since these chemicals move to the actively growing underground rhizomes and buds, the perennial vegetative reproductive capability can be slowed or stopped.

Dalapon (Dowpon M, Basfapon) and Roundup (glyphosate) are the two compounds of this type most frequently used in Indiana. Mefluidide (MBR 12325, Embark, Vistron), Asulox (asulam) and MSMA (Ansar 529, Merge, Daconate) are applied to johnsongrass foliage. Depending upon the herbicide used, movement downward in the plant is sufficient with these compounds to result in partial to good control of the rhizomes.

When postemergence foliage applications are made to johnsongrass, it is important

that the plants be allowed to reach the proper stage of growth, generally from knee-high to flowering. See individual product labels for specifics on stage of growth and rates.

The soil and underground plant system should not be disturbed prior to treatment with a translocated foiliage herbicide since this disrupts the underground plant parts and interferes with the pathways for downward translocation. On the other hand, tillage several days to a few weeks after application generally enhances control of johnsongrass because of the additional stress involved.

Dalapon is labeled for preplow foliage treatment ahead of corn or soybeans and for a number of non-crop uses.

For preplow foliage treatment prior to cropping, spray with 5 to 7 pounds per acre of dalapon (Dowpon) when the johnsongrass is 8 to 12 inches tall. Plow 3 days later, wait a minimum of 3 days, prepare the seedbed, and plant. If soil remains unusually dry after plowdown, a longer wait may be needed before planting. The dalapon must be dissipated from the soil, or crop injury will result. Discing of the land between plowing and preparation for planting will improve control of established plants and help insure rapid disappearance of dalapon residue. Soybeans are somewhat more sensitive to dalapon injury than corn. An effective control program requires that preplant herbicide for seedlings and cultivation after the crop emerges be used in conjuction with the dalapon treatment. This combination treatment results in control of established johnsongrass but causes a delay in planting date.

The late planting date may be circumvented by applying 8 to 9 pounds per acre dalapon the fall previous to the season corn or soybeans is grown. Best results are obtained from summer or fall treatments when the johnsongrass is first mowed and then the rapidly developing regrowth is sprayed. The land can be plowed either in the fall or spring following this treatment.

Dalapon can also be used for established johnsongrass in nonagricultural land. Dalapon (Basfapon or Dowpon) will result in control of johnsongrass without sterilizing the soil. As a result a competitive ground cover can be planted 1 or 2 months after the last dalapon treatment. Two applications of 10 to 15 pounds per acre will probably be required where johnsongrass cannot be tilled following application.

Roundup (glyphosate) is a water-soluble herbicide for nonselective control of johnsongrass and many other perennial weeds. It is foliar applied and translocates downward to kill underground perennial plant parts. Roundup is inactivated rapidly upon reaching the soil; consequently, there are no residual herbicidal effects in the soil and desirable crops can be re-established shortly after application.

The most recent label for roundup includes a number of approved uses. Control of annual and perennial weeds in: cropping systems before emergence of barley, corn (all), oats, sorghum (milo), soybeans, and wheat; nonbearing apple and cherry trees; industrial and non-crop areas; and turfgrass establishment or renovation.

Roundup is suggested at rates of 2 to 3 quarts per acre. All of our applications have been at 2 quarts with consistent results. It should be applied to actively growing johnsongrass. Best kill of johnsongrass is obtained when johnsongrass is sprayed in the boot or seedhead stages. However, good results can be expected once the johnsongrass reaches 24 inches tall. Since prevention of seed formation is essential to preventing future reinfestations, applications made when johnsongrass is in the boot stage appear to be ideal. Allow 7 days after application before tillage. Directed post-emergence applications through a recirculating spray system have been approved.

Soybeans is the only crop grown in Indiana which is approved for treatments using the recirculating sprayer. The johnsongrass needs to be a minimum of 6 inches above the soybeans, and the spray should be

kept at least 2 inches above the crop. The recirculating sprayer should be used only where an adequate program for seedling control is practiced. For example, 1 1/2 quarts per acre of Treflan followed by cultivation and then the recirculating sprayer. For additional information on this practice, consult the product label.

Suggested Programs for Johnsongrass Control

The following programs are based on the assumption that control of johnsongrass is best approached as a problem requiring a planned and continuing program over a period of years rather than as a one-shot treatment. These programs cover the most common situations encountered in Indiana. Similar programs can be developed for other situations by selecting available methods that are appropriate.

Consult this year's Purdue University Extension Publication ID-1 Weeding with Chemicals for current herbicide use suggestions.

Up-to-date herbicide labels provide detailed instructions on rates, methods of application and approved uses for individual herbicides.

SUGGESTED PROGRAMS FOR JOHNSONGRASS CONTROL

Crop	Situation	Total control program
	Cropland	
Soybeans Corn Wheat	Newly established isolated plants or patches in fields not previously infested with johnsongrass.	Do not bury seeds in the soil. Spot spray with Roundup prior to seedhead production by johnsongrass.
Soybeans	Light to heavy infestations (minimum treatment for johnsongrass infested fields).	Plow and disc. Treflan, Tolban or Basalin 1 quart per acre preplant incorporated by discing twice. (1 quart per acre rate permits rotation to alternate crops such as wheat or corn). Cultivate. Direct spray with Roundup using recirculating sprayer and/or spot spray with Roundup.
Soybeans to be followed by soybeans	Moderate to heavy infestations. May planting.	Plow and disc. Treflan, Tolban or Basalin 1.5-2 quarts per acre preplant incorporated by discing twice. Cultivate. Direct spray with Roundup using recirculating sprayer and/or spot spray with Roundup.
	Heavy infestations. Mid to late June planting.	Let johnsongrass grow to 18 to 24 inches in height in late spring. Apply Roundup or dalapon (Dowpon M or Basfapon) to johnsongrass foliage. Allow several days for herbicide translocation to rhizomes (see herbicide labels). Plow and disc. Treflan, Basalin or Tolban 1.5-2 quarts per acre preplant incorporated by discing twice. Cultivate. Direct spray with Roundup using recirculating sprayer and/or spot spray with Roundup
Soybeans	Johnsongrass 6 or more inches taller than soybeans.	Direct spray with Roundup using recirculating sprayer. Keep spray at least 2 inches above the top of soybean plants.

SUGGESTED PROGRAMS FOR JOHNSONGRASS CONTROL

Crop	Situation	Total control program
	Cropland (continued)	
Corn Early May planting	Light to heavy infestations The most practical single season program for corn harvested for grain.	Plow and disc. Eradicane or Sutan+ 7.3 pints per acre preplant incorporated immediately after spraying by discing twice. Cultivate. Spot spray with Roundup.
Winter wheat (Can be followed by corn or soybeans the next year without a delayed planting date)	Heavy infestations.	Harvest wheat in late June or early July. Mow stubble (optional). Let johnsongrass regrow until 24 to 30 inches tall (3 to 5 weeks). Apply Roundup or dalapon to johnsongrass foliage. Allow 1 to 4 weeks for herbicide to work. Plow and disc. Till soil when johnsongrass reaches 6 inches. Repeat as needed until frost. In spring disc, or plow and disc. Use the appropriate control program suggested above (for heavy infestations - early May planting) for corn or soybeans.
Forages Hay (alfalfa or alfalfa-grass mixtures)	Light to heavy infestations. The competition and mowing combine to reduce the vigor of established johnsongrass.	Maintain a good stand of hay and mow often enough to prevent seedhead formation on the johnsongrass. Three or four mowings will be needed.
Pastures (fescue bluegrass bromegrass orchardgrass, etc.)	Light to heavy infestations.	Graze intensively enough to keep stress on the johnsongrass. Additional occasional mowing may be required. Do not allow johnsongrass plants to form seedheads.
No-till Corn Soybeans	Light to heavy infestations.	Effective and economical control practices are not available for corn or soybean production in johnsongrass-infested fields when plowing and seedbed preparation are eliminated. Don't use no-till in johnsongrass.

SUGGESTED PROGRAMS FOR JOHNSONGRASS CONTROL

Item	Situation	Total control program
	Noncropland	
Areas not previously infested	Newly established isolated plants or patches.	Do not bury seed in the soil since this stores it for years to come. Remove johnsongrass plants prior to seedhead formation. Kill any rhizomes which have formed. Spot spray with Roundup after plants are 18 inches tall and before seedheads emerge. Repeat as needed.
Established infestations (Bare soil is wanted or can be tolerated)	Isolated plants or patches.	Spot treat with a soil sterilant such as Sodium chlorate--borate, Hyvar XL or Pramitol. -or- Spot treat with foliage translocated herbicides such as Roundup, dalapon (Dowpon M, Basafapon), MSMA, or Asulox. Spray early enough to prevent seed production. Repeat as needed.
Ground cover needed to hold soil	Moderate to heavy infestations.	Spray foliage with Roundup, Dalapon or MSMA Allow 1 to 4 weeks for herbicides to translocate and for any soil activity to dissipate. Establish a more desirable ground cover.
Cool season turf is present	Light to moderate infestations.	Mow frequently enough to prevent johnsongrass seedhead formation. A minimum of four of five mowings are normally needed. More frequent mowing will result in even better johnsongrass control.

JOHNSONGRASS LAW

Enacted by the 1977 General Assembly of the State of Indiana:

SECTION 1. IC 15-3-5 is amended by adding a new section 2 to read as follows: Sec. 2. The existence and growth of sorghum halepense, commonly known as Johnsongrass is a public nuisance. The director of the Purdue University Agricultural Experiment Station shall:

(1) Undertake investigations to determine the extent of infestation of Johnsongrass and other weed species, along with their effect on agricultural production in this state; and

(2) promulgate regulations under IC 4-22-2 to define those weed species which adversely affect agricultural production and to control the growth and spread of such species.

(3) Prior to final promulgation, under this section, the direction of the Purdue University Agricultural Station shall present any proposed regulations to a committee of state legislators for their review and comment. The committee shall be composed of four (4) members to be appointed as follows: two (2) State Representatives appointed by the Speaker of the House and two (2) State Senators appointed by the President Pro Tempore of the Senate. No more than two (2) members may be from the same political party.

The director may enter into agreements with any other governmental unit and accept any financial aids in order to carry out the provisions of this section.

Section 2. IC 15-3-5 is amended by adding a new section 3 to read as follows: Sec. 3. The Indiana Cooperative Extension Service shall provide technical assistance to property owners in order to control the growth or spread of Johnsongrass.

SECTION 3. IC 15-3-5 is amended by adding a new section 4 to read as follows: Sec. 4. A person who knowingly contaminates uninfested land with Johnsongrass or transports Johnsongrass in any form capable of germination, except with the prior written approval of the director of the Agricultural Experiment Station or his designee, commits a class A infraction.